

NO-R188 769

VALIDATE ALGORITHMS FOR THE DETERMINATION OF RAINFALL
RATES FROM SSM/I NL. (U) WISCONSIN UNIV-MADISON SPACE
SCIENCE AND ENGINEERING CENTER. SEP 87
#00014-86-C-2001

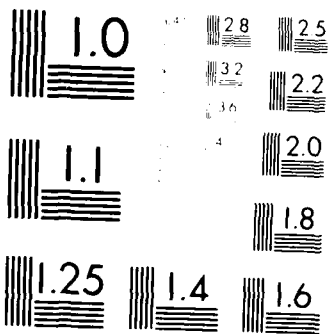
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MICROCOPY RESOLUTION TEST CHART
NBS 1963-A

Title: Validate Algorithms for the
Determination of Rainfall Rates from SSM/I
Microwave Satellite Imagery.

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per memo from NRL

s1b 2-19-88

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Progress Report for August / September 1987

Over the past two months, our research effort has been focussed on (a) obtaining and processing radar and calibrating raingage data from our primary validation sites which correspond to SSM/I overpasses, (b) ordering the SSM/I data for the same cases, and (c) completing the software required for merging the surface data and the SSM/I measurements. Since the required surface data has only recently arrived, we have made a preliminary assessment of the SSM/I brightness temperature measurements and rainfall products using National Weather Service raingage reports and GOES infrared imagery. We have also begun an informal collaboration with scientists of the Severe Storms Branch of NASA/Goddard Space Flight Center in order to expedite the radiative transfer modeling necessary for the analysis and improvement of the current rain rate algorithm.

Validation Data

The following is a listing of data either received or ordered which corresponds to coincident observation by the SSM/I and our primary validation radar/gage networks.

Cape Canaveral:

- (1) Day 209 / 22Z - Day 210 / 02Z
Radar data received; gage data ordered;
SSM/I data received.
- (2) Day 225 / 22Z - Day 226 / 02Z
Radar data received; gage data ordered;
SSM/I data received.

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Distribution Unlimited

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Marshall, Colorado:

- (1) Day 210 / 23Z - Day 211 / 03Z
Radar data received; gage data received;
SSM/I data received.
- (2) Day 223 / 23Z - Day 224 / 03Z
Radar data received; gage data received;
SSM/I data ordered.
- (3) Day 266 / 23Z - Day 267 / 03Z
Radar data received; gage data received;
SSM/I data ordered.

United Kingdom:

Gage-calibrated radar data for the entire month of August has been received; SSM/I overpasses during August will be selected.

In addition, we have acquired access to archived digitized radar data from the National Weather Service office in Silver Spring, Maryland. This archive contains data from 11 radar sites in the United States. Access to this archive substantially enhances our ability to establish a large validation data base in the near future.

Validation Software

Software for unloading and processing the radar and raingage data issued from the primary validation sites and the Silver Spring archive is nearly finished. The software necessary for merging the ground truth and SSM/I data (including TDR's, SDR's and EDR's) has been completed.

Goals:

In the next two months we expect to complete the development of all validation software and begin analysis of rain rates estimated using the Hughes algorithm. Concurrently we will be ordering radar and gage measurements coincident with SSM/I overpasses for additional rain cases. These will include future data from our primary validation sites, as well as measurements dating back to mid-July from our secondary sites (eg. AES radars, NWS radars, Australian radars, etc.).

Costs Incurred:

Costs incurred out of the total \$289,998.00 budgeted are as follows:

<u>Month</u>	<u>Cost for Given Month</u>	<u>Total Cost</u>
August	8,245.75	265,755.91
September	7,200.44	272,956.35



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